IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Patent Application

Applicant(s): Lior Shabtay
Docket No.: 500001-A-01-US (Shabtay)
Serial No.: 09/718,143
Filing Date: November 21, 2000
Group: 2153
Examiner: Aaron N. Strange

Title: Dynamic Load Balancer

AMENDED APPEAL BRIEF

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313

Sir:

This amended Appeal Brief is a modified version of the Appeal Brief submitted on May 18, 2006 in response to the non-final Office Action, dated February 22, 2006, in the above-referenced application. In the non-final Office Action, the Examiner reopened prosecution in response to the Appeal Brief filed on November 23, 2005. A Notice of Appeal was submitted with the Appeal Brief on May 18, 2006 in order to reinstate the appeal.

The Summary Section of this amended Appeal Brief has been modified to conform to the Notification of Non-Compliant Appeal Brief, dated January 18, 2007.

REAL PARTY IN INTEREST

The present application is assigned to Avaya Inc. or a subsidiary thereof. Avaya Inc. is the real party in interest.

RELATED APPEALS AND INTERFERENCES

There are no known related appeals and interferences.

STATUS OF CLAIMS

Claims 1-41 are currently pending in the application. Claims 1, 13, 28 and 37 are the independent claims. Claims 1-22, 28-35 and 37-41 stand rejected variously under §§112 and 103(a). The Examiner indicates that claims 23-27 and 36 would be allowable if rewritten in independent form. The rejections of claims 1-22, 28-35 and 37-41 are appealed.

STATUS OF AMENDMENTS

Amendments to claims 3, 6 and 9 were filed after the final rejection, dated December 16, 2004, pursuant to 37 C.F.R. §1.116(b)(1). More specifically, claims 3 and 9 were amended to address typographical errors, while claim 6 was amended to correct a rejection under 35 U.S.C. §112. In addition, independent claims 1, 13, 28 and 37 were amended after final rejection pursuant to 37 C.F.R. §1.116(b)(2) to place the claims in better condition for consideration on appeal.

In the Advisory Action dated April 7, 2005, the amendments of claims 3, 6 and 9 are not addressed even though, in each case, Appellant's amendments complied with the Examiner's recommendations (see Final Office Action dated February 16, 2005, pp. 2 and 5). The Examiner expressly rejects the amendments of independent claims 1, 13, 28 and 37 because "they fail to place the application in condition for allowance and raise new issues that would require further consideration and/or search" (Advisory Action, p. 2).

With respect to the amendments of independent claims 1, 13, 28 and 37, Appellant amended these claims in order to remove issues of contention that arose during the examination and to reduce the issues for consideration on appeal. More specifically, Appellant attempted to amend each claim to include the limitation that the load balancer and accelerator switch elements are separate and discrete from one another. Nonetheless, in rejecting these amendments, the Examiner states that these limitations have not previously been considered. Appellant respectfully disagrees. The separation of the load balancer element from the accelerator switch element was argued by Appellant

in responses to both the First and Second Office Actions (see, e.g., Response to First Office Action dated August 30, 2004, p. 10, 2nd paragraph). These arguments were acknowledged by the Examiner in the Final Office Action as "features upon which appellant relies" (see, e.g., Final Office Action dated February 16, 2005, p. 3, #6). Therefore, Appellant believes that these amendments relate to issues that were considered by the Examiner in the course of the First and Second Office Actions and should have been entered under 37 C.F.R. §1.116(b)(2).

SUMMARY OF CLAIMED SUBJECT MATTER

Independent claim 1 is directed to a method of accelerating the operation of a load balancer by an accelerator switch. See, e.g., the Specification, p. 2, lines 19-20. The method comprises the step of receiving, by the accelerator switch, packets directed to the load balancer. See, e.g., the Specification, p. 10, lines 9-13; FIG. 5 (step 50); and FIG. 7 (step 50). The load balancer is configured to operate in a first mode and a second mode, wherein the load balancer operating in the first mode changes at least one of a destination IP address and a destination port of one or more packets it forwards and the load balancer operating in the second mode changes at least a source IP address and a destination IP address of one or more packets it forwards. See, e.g., the Specification, 12, lines 21-29; p. 16, lines 11-27; FIG. 5 (step 55); and FIG. 7 (steps 86 and 88). The method also comprises the step of determining, for at least one of the received packets, whether the packets match an entry of a list of packet groups, by comparing fewer than five packet parameters that are not changed by the load balancer to respective fields of entries of the list. See, e.g., the Specification, p. 2, line 21-p. 3, line 7; FIG. 5 (steps 54, 58 and 64); and FIG. 7 (steps 54, 58 and 64). In addition, the method further comprises the step of forwarding, by the accelerator switch, at least one of the received packets, directly to its destination, responsive to the determining. See, e.g., the Specification, p. 12, lines 21-29; p. 16, lines 19-27; FIG. 5 (steps 56 and 62); and FIG. 7 (steps 56 and 62).

Independent claim 13 is directed to a method of creating an entry in a list which correlates between packet groups and respective destination servers. See, e.g., the Specification, p. 6, lines 6-10. The method comprises the step of receiving, by an accelerator, a packet directed from or to a

load balancer. See, e.g., the Specification, p. 10, lines 9-13; FIG. 5 (step 50); and FIG. 7 (step 50). The load balancer is configured to operate in a first mode and a second mode, wherein the load balancer operating in the first mode changes at least one of a destination IP address and a destination port of one or more packets it forwards and the load balancer operating in the second mode changes at least a source IP address and a destination IP address of one or more packets it forwards. See, e.g., the Specification, 12, lines 21-29; p. 16, lines 11-27; FIG. 5 (step 55); and FIG. 7 (steps 86 and 88). The method also comprises the step of creating, by the accelerator, an entry comprising parameters not changed by the load balancer in the list of destination servers, responsive to the received packet. See, e.g., the Specification, p. 3, lines 8-15; p. 3, lines 20-25; FIG. 5 (step 60); and FIG. 7 (step 84).

Independent claim 28 is directed to a load balancing accelerator comprising an input interface which receives packets directed to a load balancer, a table which lists packet groups and their respective destination servers, the table having physical entries which can accommodate different field sets for storage of data entries, and a comparator which compares at least one of the packets directed to the load balancer to one or more of the data entries of the table. See, e.g., the Specification, p. 7, lines 4-12; FIG. 1 (accelerator 26 and load balancer 24); FIG. 2 (table 30); FIG. 4 (table 31); and FIG. 6 (table 130). In addition, the load balancing accelerator further comprises a forwarding unit which forwards at least one of the packets for which a match was found by the comparator, directly to a server, responsive to the contents of the matching data entry, and a controller which determines in which field set, from the plurality of different field sets, each of the data entries of the table is stored. See, e.g., the Specification, p. 7, lines 4-12.

Independent claim 37 is directed to a load balancing accelerator comprising an input interface which receives packets directed to a load balancer, a table which lists packet groups and their respective destination servers, and a comparator which compares at least one of the packets directed to the load balancer to one or more of the data entries of the table. See, e.g., the Specification, p. 7, line 24-p. 8, line 8; FIG. 1 (accelerator 26 and load balancer 24); FIG. 2 (table 30); FIG. 4 (table 31); and FIG. 6 (table 130). In addition, the load balancing accelerator further comprises a forwarding unit which forwards at least one of the packets for which a match was found by the comparator, directly to a server, responsive to the contents of the matching data entry, the forwarding unit being

capable of operating in a plurality of operation modes, at least one of the operation modes including changing at least one of the fields of the forwarded packets. See, e.g., the Specification, p. 7, line 24-p. 8, line 8. A controller determines in which mode the forwarding unit operates. See, e.g., the Specification, p. 7, line 24-p. 8, line 8.

Many advantages flow from the teachings of the present invention. The prior art generally uses a set of five parameters which identify communication sessions in differentiating between different groups based on the general practice that load balancers relate the same way to packets belonging to a single session . Specification, p. 2, lines 28-30. Many load balancers, however, relate the same way to larger groups defined by sets of parameters including fewer than five parameters. By using these smaller sets of parameters in grouping the packets, the operation of the accelerator is simplified (e.g., a load balancing table of the accelerator is kept small), without violating load balancing rules of the accelerated load balancer. In addition, in some cases it is possible to identify communication sessions based on different sets of parameters, as some of the parameters in the set may be superfluous in a specific context. Using fewer parameters simplifies the operation of the load-balancing accelerator and reduces the amount of storage space required. Specification, p. 2, line 30-p. 3, line 6.

GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

1. Claim 6 is rejected under 35 U.S.C. §112, 2nd paragraph.

2. Claims 1-22, 28-35 and 37-41 are rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 6,157,644 (hereinafter "Bernstein") in view of U.S. Patent No. 6,389,462 (hereinafter "Cohen").

ARGUMENT

Appellant incorporates by reference herein the disclosures of all previous responses filed in the present application.

1. Rejection under 35 U.S.C. §112, 2nd paragraph

Claim 6

In the Final Office Action dated February 16, 2005 on p. 5, the Examiner recommends that claim 6 be amended to specify that the load balancer element is operating in the first mode. Appellant agrees and, therefore, filed the corresponding amendment after final rejection pursuant to 35 C.F.R. §1.116(b). Nonetheless, the Examiner failed to enter this amendment. The §112 rejection of claim 6 therefore remains at issue on appeal.

2. Rejection under 35 U.S.C. §103(a) over Bernstein in view of Cohen

Claims 1-5, 8 and 10-19

Appellant initially notes that the establishment of a *prima facie* case of obviousness requires that "the prior art reference (or references when combined) must teach or suggest all the claim limitations." Manual of Patent Examining Procedure (MPEP), Eighth Edition, August 2001, §2143. In addition, there must be "some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings." Id. Any such showing of motivation "must be based on objective evidence of record" rather than "subjective belief and unknown authority." In re Sang-Su Lee, 277 F.3d 1338, 1343-44, 61 USPQ2d 1430 (Fed. Cir. 2002). Finally, "[i]f the proposed modification or combination of the prior art invention would change the principle of operation of the prior art invention being modified, then the teachings of the reference are not sufficient to render the claims *prima facie* obvious." MPEP §2143.01, *citing* In re Ratti, 270 F.2d 810, 123 USPQ 349 (CCPA 1959).

Based on these criteria, Appellant respectfully asserts that the current §103(a) rejection of claims 1-5, 8 and 10-19 are defective for at least three reasons. First, the proposed reference combination fails to teach or suggest all the claim limitation. Second, there is no objective evidence of record creating a suggestion or motivation in the art for combining the proposed references. Finally, the proposed combination changes the principle of operation of the prior art being modified.

Independent claim 1, for example, sets forth:

> A method of accelerating the operation of a load balancer by an accelerator switch, comprising:
>
> receiving, by the accelerator switch, packets directed to the load balancer, the load balancer being configured to operate in a first mode and a second mode, wherein the load balancer operating in the first mode changes at least one of a destination IP address and a destination port of one or more packets it forwards and the load balancer operating in the second mode changes at least a source IP address and a destination IP address of one or more packets it forwards;
>
> determining, for at least one of the received packets, whether the packets match an entry of a list of packet groups, by comparing fewer than five packet parameters that are not changed by the load balancer to respective fields of entries of the list; and
>
> forwarding, by the accelerator switch, at least one of the received packets, directly to its destination, responsive to the determining.

In formulating the §103(a) rejection of this claim, the Examiner fails entirely to point out where Bernstein and/or Cohen teach or suggest the claimed "determining" step comprising "comparing fewer than five parameters that are not changed by the load balancer to respective fields of entries of the list" (*emphasis added*). Appellant respectfully submits that neither Bernstein nor Cohen in fact teach or suggest such a limitation on the parameters that can be compared. The rejection of this claim is therefore deficient for this reason alone.

What is more, in stating the motivation for combining aspects of Cohen with Bernstein, the Examiner states on p. 6 of the current Office Action:

> Cohen teaches the use of load balancers to direct requests for content to proxy servers. . . . Load balancers would have been an advantageous addition to the system disclosed by Bernstein since the accelerator switch taught by Bernstein would have increased the throughput between the clients and the proxies at low cost, since subsequent requests could be handled by the switch and bypass the load balancer.
>
> Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use load balancers as the router in the system taught by Bernstein in order to increase the throughput of the load balancing network.

Clearly, in contravention to the requirements for a valid §103(a) rejection stated above, the above-quoted arguments lack any basis in objective evidence of record that would motivate one skilled in the art to combine the references as suggested. Instead, the Examiner has apparently used improper hindsight by using the Appellant's teachings as a blueprint to hunt through the prior art for the

claimed elements and combine them as claimed. The result is an argument to combine references that finds its motivation in advantageous aspects of the present invention, namely increasing throughput in the load balancing network. The Federal Circuit has repeatedly held that such an approach is "an illogical and inappropriate process by which to determine patentability." Sensonic, Inc. v. Aerosonic Corp., 81 F.3d 1566, 1570, 38 USPQ2d 1551, 1554 (Fed. Cir. 1996).

Furthermore, as stated above in general terms, Appellant submits that the addition of aspects of Cohen to the primary reference, Bernstein, would change the principle of operation of Bernstein. In formulating the §103(a) of claim 1, the Examiner correctly states that "Bernstein fails to specifically disclose that the router is a load balancer configured to operate in a first mode that changes at least one of a destination IP address and a destination port and a second mode that changes at least a source IP address and a destination IP address of one or more packets it forwards." Current Office Action, p. 6. For this reason, the Examiner relies on Cohen to teach a load balancer which can operate in these modes. Nevertheless, one skilled in the art will recognize that the addition of these modes (i.e., the addition of half or full network address translation) to Bernstein's router would require a substantial redesign of way in which packets are addressed and routed in Bernstein's invention. As a result, there would be no technological motivation for engaging in the modification. To the contrary, there would be a disincentive.

Independent claim 13 comprises limitations similar to independent claim 1. As a result, this claim is believed to be in condition for allowance for reasons similar to those expressed above for claim 1. Moreover, dependent claims 2-5, 8, 10-12 and 14-19 are believed to be in condition for allowance for at least the same reasons as their independent base claims.

Claims 6, 7, 9 and 20-22

Claims 6, 7, 9 and 20-22 are believed to be in condition for allowance for at least the same reasons as their respective base claims. Moreover, the §103(a) rejection of these claims is believed to contain additional defects.

In formulating the §103(a) rejection of claims 6, 7 and 9, the Examiner states on p. 8 of the current Office Action:

> With regard to claims 6, 7, and 9 while the system disclosed by Bernstein and Cohen shows substantial features of the claimed invention (discussed above), it fails to specifically disclose that the compared parameters are the source IP/port or specifically exclude the destination address and/or source address.
>
> Nonetheless, it is apparent that the compared parameters are merely a personal preference of the system designer, and one of ordinary skill in the art would have readily recognized the appropriate parameters to compare based on their implementation of the system.
>
> Therefore, it would have been obvious to one of ordinary skill in the art to compare any of the available parameters in order to determine where to forward the received packets, based on the design goals of the system

Appellant respectfully asserts that such an argument is untenable. As stated before, a reference combination must teach or suggest all the claim limitations. MPEP §2143. In the cited argument, the Examiner expressly states that neither Bernstein nor Cohen disclose all the limitations of claims 6, 7 and 9. The proposed reference combination, therefore, fails to teach or suggest each and every claim limitation.

Claims 20-22 are rejected "under the same rationale as claims 6, 7, and 9 since they recite similar subjected matter." Current Office Action, pp. 11 and 12. Accordingly, Appellant respectfully asserts that the rejection of these claims is also defective.

Claims 28, 30, 32 and 37

In formulating the §103(a) rejection of independent claims 28 and 37, the Examiner relies on the same argumentation from combining Bernstein and Cohen as that utilized in rejecting independent claim 1. Current Office Action, pp. 11-14. Accordingly, Appellant respectfully submits that the rejection of these claims is deficient for many of the same reasons described above with respect to claim 1 including the lack of objective evidence of record creating a suggestion or motivation in the art for combining the proposed references and the fact that the proposed combination changes the principle of operation of the prior art being modified.

Dependent claim 30 and 32 are believed to be in condition for allowance for the same reasons as their base claim, independent claim 28.

Claim 29

Dependent claim 29 is rejected "under the same rationale as claims 6, 7 and 9." Current Office Action, p. 12. Appellant respectfully submits that this claim is in condition for allowance for the same reasons as its base claim as well as for the reasons described above with respect to claims 6, 7 and 9. Moreover, claim 29 is believed to contain separately patentable subject matter over the Bernstein/Cohen reference combination.

Claim 29 sets forth:

> An accelerator according to claim 28, wherein the controller comprises a user interface through which a user may configure the field sets in which the data entries of the table are stored.

One skilled in the art will recognize that neither Bernstein nor Cohen teach or suggest a "user interface" like that claimed. As a result, the proposed reference combination does not teach or suggest all the limitations of claim 29.

Claim 31

Dependent claim 31 is rejected "under the same rationale as claims 6, 7 and 9." Current Office Action, p. 12. Appellant respectfully submits that this claim is in condition for allowance for the same reasons as its base claims as well as for the reasons described above with respect to claims 6, 7 and 9. Moreover, claim 31 is believed to contain separately patentable subject matter over the Bernstein/Cohen reference combination.

Claim 31 sets forth:

> An accelerator according to claim 30, wherein the controller transmits one or more packets to the load balancer and examines the response of the load balancer to determine the field sets in which the data entries are stored.

One skilled in the art will recognize that neither Bernstein nor Cohen teach or suggest determining field sets in the manner claimed. As a result, the proposed reference combination does not teach or

suggest all the limitations of claim 31.

Claim 33

Dependent claim 33 is rejected "under the same rationale as claims 6, 7 and 9." Current Office Action, p. 12. Appellant respectfully submits that this claim is in condition for allowance for the same reasons as its base claim as well as for the reasons described above with respect to claims 6, 7 and 9. Moreover, claim 33 is believed to contain separately patentable subject matter over the Bernstein/Cohen reference combination.

Claim 33 sets forth:

> An accelerator according to claim 28, wherein the controller determines the field sets in which the data entries of the table are stored, such that at least during some periods of operation of the accelerator, the table includes at least two data entries stored in different field sets.

One skilled in the art will recognize that neither Bernstein nor Cohen teach or suggest determining field sets in the manner claimed. As a result, the proposed reference combination does not teach or suggest all the limitations of claim 33.

Claim 34

Dependent claim 34 is rejected "under the same rationale as claims 6, 7 and 9." Current Office Action, p. 12. Appellant respectfully submits that this claim is in condition for allowance for the same reasons as its base claim as well as for the reasons described above with respect to claims 6, 7 and 9. Moreover, claim 34 is believed to contain separately patentable subject matter over the Bernstein/Cohen reference combination.

Claim 34 sets forth:

> An accelerator according to claim 28, wherein at least one of the physical entries of the table can be configured for use with different field sets.

One skilled in the art will recognize that neither Bernstein nor Cohen teach or suggest physical entries of a table configurable in the manner claimed. As a result, the proposed reference combination does not teach or suggest all the limitations of claim 34.

Claim 35

Dependent claim 35 is rejected "under the same rationale as claims 6, 7 and 9." Current Office Action, p. 12. Appellant respectfully submits that this claim is in condition for allowance for the same reasons as its base claim as well as for the reasons described above with respect to claims 6, 7 and 9. Moreover, claim 35 is believed to contain separately patentable subject matter over the Bernstein/Cohen reference combination.

Claim 35 sets forth:

> An accelerator according to claim 28, wherein the table comprises a plurality of sub-tables with physical entries having different field sets.

One skilled in the art will recognize that neither Bernstein nor Cohen teach or suggest a plurality of sub-tables like those claimed. As a result, the proposed reference combination does not teach or suggest all the limitations of claim 35.

Claim 38

Dependent claim 38 is believed to be in condition for allowance for the same reasons as its base claim. Moreover, claim 38 is believed to contain separately patentable subject matter over the Bernstein/Cohen reference combination.

Claim 38 sets forth:

> An accelerator according to claim 37, wherein the forwarding unit is capable of performing splicing.

"Splicing" is defined in the Specification as being a mode wherein the load balancer changes the

TCP sequence numbers (including acknowledgment numbers) of packets it forwards, possibly in addition to the IP addresses and/or protocol ports. Specification, p. 19, lines 28-30. In formulating the §103(a) rejection, the Examiner argues that this claim is taught or suggested by Bernstein at col. 4, line 64 through col. 5, line 7 where Bernstein describes a router accelerator switch that is transparent to attached networks and routers. Appellant respectfully asserts that such transparency has nothing to do with performing splicing as splicing is defined in the Specification and in common usage among those skilled in the computer science art.

For at least the reasons given above, Appellant respectfully requests withdrawal of the §112 and §103(a) rejections.

Respectfully submitted,

Date: January 23, 2007

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CLAIMS APPENDIX

1. A method of accelerating the operation of a load balancer by an accelerator switch, comprising:

receiving, by the accelerator switch, packets directed to the load balancer, the load balancer being configured to operate in a first mode and a second mode, wherein the load balancer operating in the first mode changes at least one of a destination IP address and a destination port of one or more packets it forwards and the load balancer operating in the second mode changes at least a source IP address and a destination IP address of one or more packets it forwards;

determining, for at least one of the received packets, whether the packets match an entry of a list of packet groups, by comparing fewer than five packet parameters that are not changed by the load balancer to respective fields of entries of the list; and

forwarding, by the accelerator switch, at least one of the received packets, directly to its destination, responsive to the determining.

2. A method according to claim 1, wherein determining whether the packets match an entry of the list comprises comparing three or fewer parameters of the packets to respective fields in the list.

3. A method according to claim 2, wherein determining whether the packets match an entry of the list comprises comparing two parameters of the packets to a respective field in the list.

4. A method according to claim 2, wherein determining whether the packets match an entry of the list comprises comparing a single parameter of the packets to a respective field in the list.

5. A method according to claim 1, wherein receiving packets directed to the load balancer comprises receiving packets directed from a client to a Web site associated with the load balancer and forwarding at least one of the received packets directly to its destination comprises forwarding

the packets from the clients to one of the servers of the Web site without passing through the load balancer.

6. A method according to claim 5, wherein determining whether the packets match an entry of the list comprises comparing the source IP address and source port of the packets to respective fields in the list.

7. A method according to claim 5, wherein the compared parameters do not include a destination address.

8. A method according to claim 1, wherein receiving packets directed to the load balancer comprises receiving packets directed from a server to a client and forwarding at least one of the received packets directly to its destination comprises forwarding the packets from the server to the client without passing through the load balancer.

9. A method according to claim 8, wherein determining whether the packets match an entry of the list comprises comparing the destination port of the packets to respective fields in the list.

10. A method according to claim 8, wherein the compared parameters do not include a source address.

11. A method according to claim 1, wherein forwarding at least one of the received packets comprises forwarding packets for which a matching entry was found.

12. A method according to claim1, wherein the load balancer operates in half NAT or full NAT mode.

13. A method of creating an entry in a list which correlates between packet groups and respective destination servers, comprising:

receiving, by an accelerator, a packet directed from or to a load balancer, the load balancer being configured to operate in a first mode and a second mode, wherein the load balancer operating in the first mode changes at least one of a destination IP address and a destination port of one or more packets it forwards and the load balancer operating in the second mode changes at least a source IP address and a destination IP address of one or more packets it forwards; and

creating, by the accelerator, an entry comprising parameters not changed by the load balancer in the list of destination servers, responsive to the received packet.

14. A method according to claim 13, wherein creating the entry comprises creating an entry which does not include a destination address of a Web site.

15. A method according to claim 13, wherein the packet is directed from or to a load balancer operating in a half NAT mode.

16. A method according to claim 13, wherein the packet is directed from or to a load balancer operating in a full NAT mode.

17. A method according to claim 13, wherein receiving the packet comprises receiving a packet directed from the load balancer to a server.

18. A method according to claim 13, wherein receiving the packet comprises receiving a packet directed from a server to the load balancer.

19. A method according to claim 13, wherein creating the entry comprises creating the entry using only information in the received packet as it was received.

20. A method according to claim 13, wherein creating the entry comprises creating the entry using information not included in the received packet as it was received.

21. A method according to claim 20, wherein creating the entry comprises creating the entry using information from a copy of the received packet, previously received by the accelerator.

22. A method according to claim 21, wherein receiving the packet comprises receiving a packet from the load balancer and creating the entry comprises creating the entry using information from the received packet and from a copy of the received packet forwarded to the load balancer.

23. A method according to claim 13, further comprising receiving, by the accelerator, a packet directed from or to an additional load balancer and creating, by the accelerator, an entry in the list of destination servers, responsive to the packet directed from or to the additional load balancer.

24. A method according to claim 13, further comprising:

receiving, by the accelerator, packets directed to a Web site handled by the load balancer;

storing identification information and values of one or more parameters of the packets directed to the Web site, in a temporary storage; and

searching the temporary storage for an entry which matches a packet directed from the load balancer,

wherein creating the entry in the list of destination servers of packet groups is performed only if a match is found.

25. A method according to claim 24, wherein storing the identification information comprises storing a unique identification number tagged to the packet by the accelerator.

26. A method according to claim 24, wherein storing the identification information comprises storing at least one of the sequence and acknowledge fields of TCP packets.

27. A method according to claim 26, wherein storing the identification information comprises storing a leading segment of the payload of the packet.

28. A load balancing accelerator, comprising:

an input interface which receives packets directed to a load balancer;

a table which lists packet groups and their respective destination servers, the table having physical entries which can accommodate different field sets for storage of data entries;

a comparator which compares at least one of the packets directed to the load balancer to one or more of the data entries of the table;

a forwarding unit which forwards at least one of the packets for which a match was found by the comparator, directly to a server, responsive to the contents of the matching data entry; and

a controller which determines in which field set, from the plurality of different field sets, each of the data entries of the table is stored.

29. An accelerator according to claim 28, wherein the controller comprises a user interface through which a user may configure the field sets in which the data entries of the table are stored.

30. An accelerator according to claim 28, wherein the controller automatically determines the field sets in which the data entries are stored.

31. An accelerator according to claim 30, wherein the controller transmits one or more packets to the load balancer and examines the response of the load balancer to determine the field sets in which the data entries are stored.

32. An accelerator according to claim 28, wherein the controller determines the field sets in which the data entries of the table are stored, such that at a single time all the data entries of the table are stored in the same field sets.

33. An accelerator according to claim 28, wherein the controller determines the field sets in which the data entries of the table are stored, such that at least during some periods of operation of the accelerator, the table includes at least two data entries stored in different field sets.

34. An accelerator according to claim 28, wherein at least one of the physical entries of the table can be configured for use with different field sets.

35. An accelerator according to claim 28, wherein the table comprises a plurality of sub-tables with physical entries having different field sets.

36. An accelerator according to claim 28, wherein the input interface receives packets directed to a plurality of load balancers and wherein the data entries corresponding to a first load balancer are stored in a first set of fields and data entries corresponding to a second load balancer are stored in a second set of fields different from the first set of fields.

37. A load balancing accelerator, comprising:

an input interface which receives packets directed to a load balancer;

a table which lists packet groups and their respective destination servers;

a comparator which compares at least one of the packets directed to the load balancer to at least one of the entries of the table;

a forwarding unit which forwards directly to a server, at least one of the packets for which a match was found by the comparator, responsive to the contents of the matching entry, the forwarding unit being capable of operating in a plurality of operation modes, at least one of the operation modes including changing at least one of the fields of the forwarded packets; and

a controller which determines in which mode the forwarding unit operates.

38. An accelerator according to claim 37, wherein the forwarding unit is capable of performing splicing.

39. An accelerator according to claim 37, wherein the controller determines the operation mode of the forwarding unit based on a user configuration.

40. An accelerator according to claim 37, wherein the controller determines the operation mode of the forwarding unit based on the contents of packets directed from or to the load balancer.

41. An accelerator according to claim 37, wherein the controller determines the operation mode of the forwarding unit by comparing the contents of packets from the load balancer with packets directed to the load balancer.

EVIDENCE APPENDIX

None

RELATED PROCEEDINGS APPENDIX

None